Wyckoff Eagle Harbor Site

EPA United States Environmental Protection Agency

DEPARTMENT OF ECOLOGY State of Washington

Community Interest Group Meeting

November 5, 2013

Agenda

Time	Agenda
9:00 a.m.	**Welcome, Introductions**
9:15 a.m.	**Scope of FFS** • *FFS Purpose and Overview*
9:45 a.m.	**Purpose of the Community Interest Group and Format**
10:00 a.m.	**FFS Recent Work and Findings** • *TarGOST Results* • *Conceptual Site Model*
11:00 a.m.	**Next Steps** • *Alternatives Evaluation* • *Informal Public Meeting (December 10, 2013)* • *Next Community Interest Group Meeting (February 4, 2014)*
11:15 a.m.	**Questions/Discussion**
noon	Meeting Adjourns

The Focused Feasibility Study (FFS) Purpose and Scope

- EPA is underway with Focused Feasibility Study (FFS).
- FFS evaluates remedial alternatives for the soil and groundwater "Operable Units" (OUs) at the Wyckoff Eagle Harbor Superfund Site.
- This is about the 8-Acre Upland Property at "The Point".
- Coordinated with a separate Focused Feasibility Study for the East Harbor OU.
- Conducted by EPA with contractor CH2M Hill.
- In close coordination – collaboration with Ecology.
- Howard and Chung are the technical and management leads for EPA and Ecology.

FFS Schedule and Status

- The FFS was initiated in spring 2012.
- Major first step was to conduct significant additional investigation and update understanding of contamination at the site (we will discuss this later today).
- Process to define and evaluate Remedial Action Alternatives between now and June 2014.
- July – September 2014 Final FFS defining Preferred Alternative.
- Fall 2014 – “Proposed Plan” will be released for formal public comment.

Community Interest Group - Purpose

- Keep the community apprised of content and progress on the Focused Feasibility Study evaluation of remedial alternatives for “The Point”.
- Receive informal input during the FFS process, enabling the team to anticipate and consider community concerns, suggestions and interests in the alternatives analysis.
- Assist the Remedial Action Proposed Plan selection and determination process by incorporating input along the way during the FFS development, prior to the formal public comment period.

Community Interest Group - Purpose

- “CIG” will be active during the FFS and Remedial Action Proposed Plan duration.
- Approximately 4 meetings.
- Typically 2 hours – this one is longer for introduction.
- Dawn Hooper is contact person for Interest Group communications between meetings.

Typical Meeting Format

- At each CIG meeting, EPA will provide an update on FFS status, recent work and findings.
- Summary materials of this work will be presented.
- For discussion and informal input from group members.
- Informal process – does not supplant formal public review and comment process that will occur for Remedial Action Proposed Plan.
- FFS technical documents will be available to CIG members when they are posted on website and available to the public (e.g: recent Sept 2013 posting of Investigation Memo).
- Meetings are not closed, if there are public “audience” members, we will include some time for their input at the end of each agenda.

Other Public Involvement

EPA will hold two informal public meetings.

Formal public comment period on Proposed Plan.

Activity	**Approximate Date**	**Notes**
Forming a Community Interest Group	May – July 2013	
Community update re: Interest Group formation	August 2013	Update to broad community, provides opportunity for additional member interest
Interest Group Meeting 1 (today)	November 2013	Quarterly, After EPA Source Investigation Report
EPA Informal Public Meeting	***December 10, 2013***	After EPA Alternatives Screening
Interest Group Meeting 2	***February 4, 2014***	Quarterly
Interest Group Meeting 3	Spring 2014	Quarterly
EPA Informal Public Meeting	April 2014	After EPA Comparative Analysis of Alternatives
Interest Group Meeting 4	Summer 2014	Quarterly
EPA Formal Public Comment Period on Remedial Action Proposed Plan	September 2014	Formal public comment period

CIG “Ground Rules”

- These meetings have limited duration, and you are all giving generously of your time to participate. Please speak concisely - respect the intent for all group members to be able to participate.
- Please listen respectfully to the full range of issues and input discussed.
- Please do not speak within the community on behalf of the group or other group members.
- We are hopeful that you will bring input to the group from your community constituencies.
- Please help us to make this as productive a process as possible.
- Remember that you will have the opportunity for formal written comment in Fall 2014. Your informal involvement to provide input between now and then is a great benefit to the project. Thank you!

FFS Recent Work and Findings

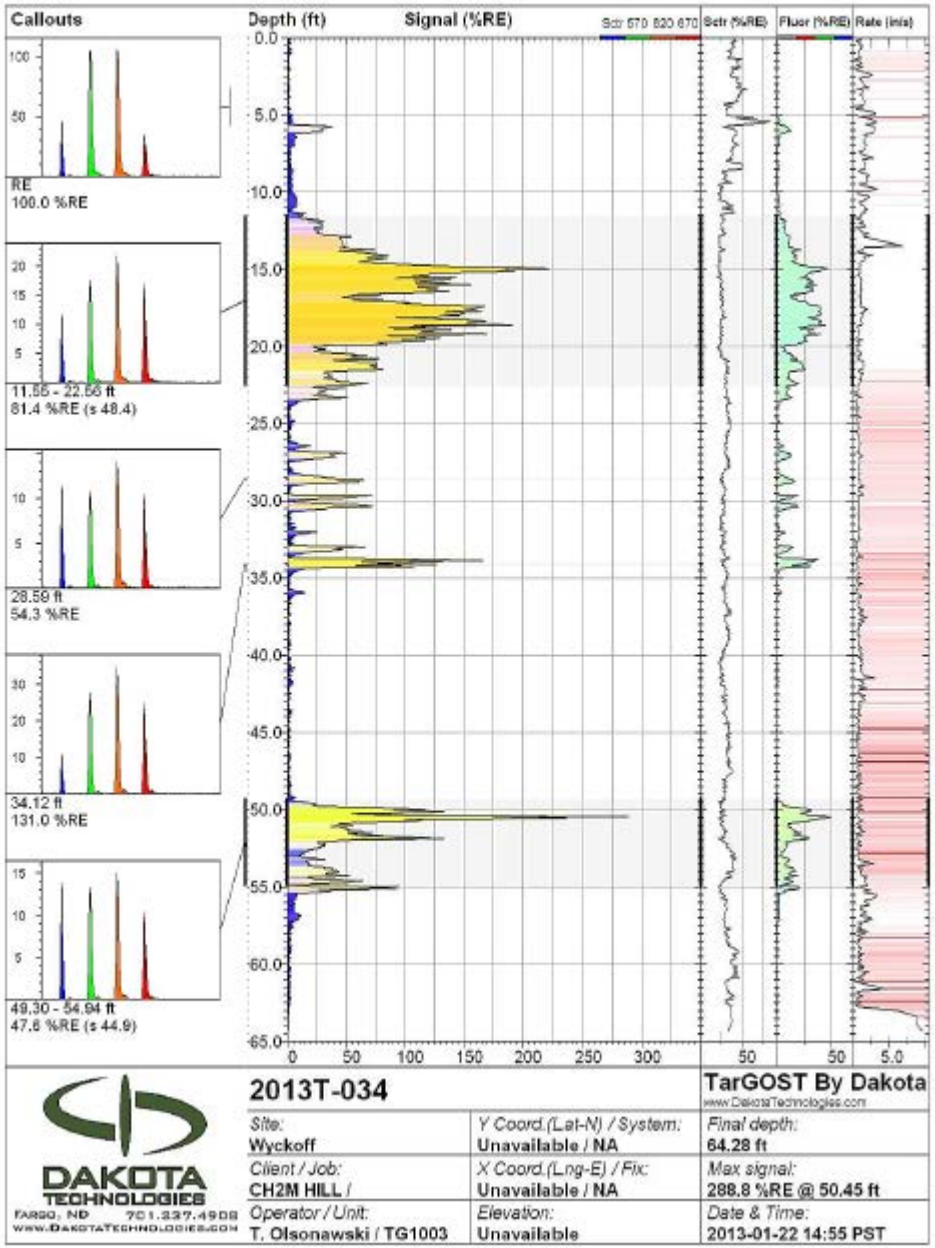
- *TarGOST Results*
- *Conceptual Site Model*

Update Conceptual Site Model

- Many years since subsurface data collected
- Creosote moves in the subsurface
- Are there “pools” of creosote?
- Where are these “pools” located?
  - Against sheet pile (metal) wall?
  - Beneath former retorts?
- Are there areas of the site with smaller amounts of creosote?

TarGOST (Tar-Specific Green Optical Scanning Tool)

Can visually “see” creosote product in the boring from below the ground surface


Callouts
Depth (ft)
Signal (%RE)
Sctr (%RE)
Fluor (%RE)
Rate (in/s)
RE
100.0 %RE
11.55 - 22.56 ft
81.4 %RE (s 48.4)
28.59 ft
54.3 %RE
34.12 ft
131.0 %RE
49.30 - 54.94 ft
47.6 %RE (s 44.9)
2013T-034
TarGOST By Dakota
www.DakotaTechnologies.com
Site:
Wyckoff
Y Coord.(Lat-N) / System:
Unavailable / NA
Final depth:
64.28 ft
Client / Job:
CH2M HILL /
X Coord.(Lng-E) / Fix:
Unavailable / NA
Max signal:
288.8 %RE @ 50.45 ft
Operator / Unit:
T. Olsonawski / TG1003
Elevation:
Unavailable
Date & Time:
2013-01-22 14:55 PST
DAKOTA TECHNOLOGIES
FARGO, ND 701.237.4908
WWW.DAKOTATECHNOLOGIES.COM

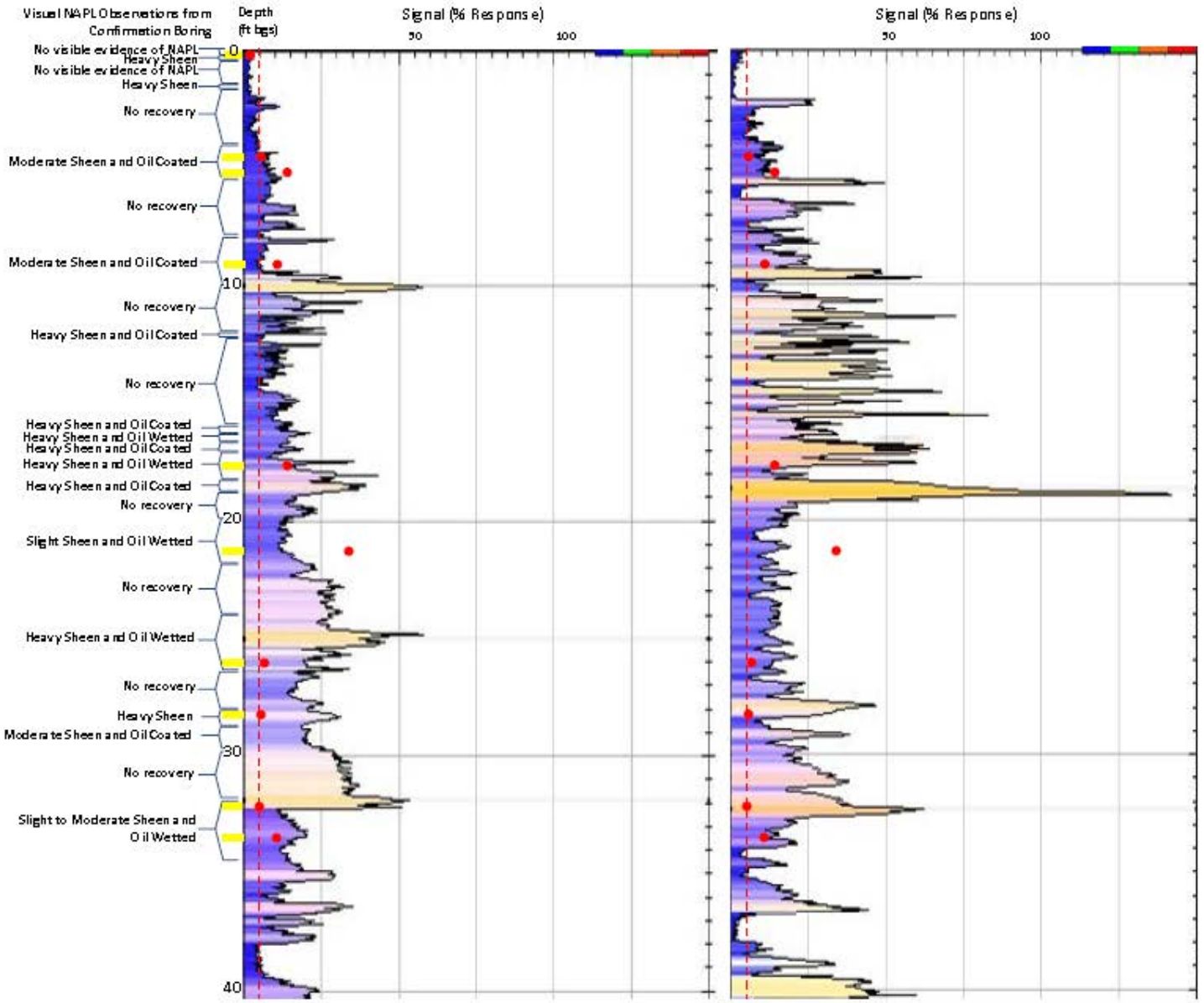
Reference Emitter (RE)

- How does the waveform relate to the amount of product (NAPL)?
- The TarGOST software determines fluorescence intensity as percent RE.
- RE is a standard Dakota Technologies NAPL that you calibrate the TarGOST tool with prior to every sounding. (Similar to the tank of isobutylene used to calibrate a PID)
- The RE normalizes the response for laser energy changes, fiber optic cable length, detector aging, etc.
- The relationship between percent RE and the concentration of NAPL depends on the fuel (PAH).

TarGOST (Tar Green Optical Scanning Tool)

Phase 1 TarGOST Probes (January 14 through February 8, 2013)	**77**
Phase 2 TarGOST Probes (February 25 through March 22, 2013)	64
Total	141
TarGOST Field Replicates	5% of total = 7
Confirmation Soil Cores	14% of total = 20

TarGOST Confirmation Boring 2013SC-001 and 001R



LEGEND

In-Situ TarGOST Measurements

In-situ TarGOST response graphs are shown as the base of these figures. The TarGOST graphs shown correspond to the colocated confirmation soil cores.

Ex-situ TarGOST Measurements

Depth interval of ex-situ TarGOST measurement performed on soil core

Approximate average value for of %RE response for ex-situ TarGOST interval

Visual NAPL Observations

Visual observation of NAPL in the confirmation soil cores is shown with depth along the left border of the co-located in-situ TarGOST graphs.

Interpretation

Selected ≥%RE indicating NAPL presence

≥%RE Chosen to Indicate NAPL Presence = 5

This value was chosen based on the top 2 feet of the log. This is the only portion of the log which had intervals of no visible NAPL. The rest of the visual observations all had some indication of NAPL presence. Though some portions of the top of the log still include sheen at very low %RE values, a more conservative value of 5%RE was chosen to indicate NAPL presence.

Figure 4-1
Example Visual NAPL Evaluation
Wyckoff Upland Field Investigation
Wyckoff/Eagle Harbor Superfund Site

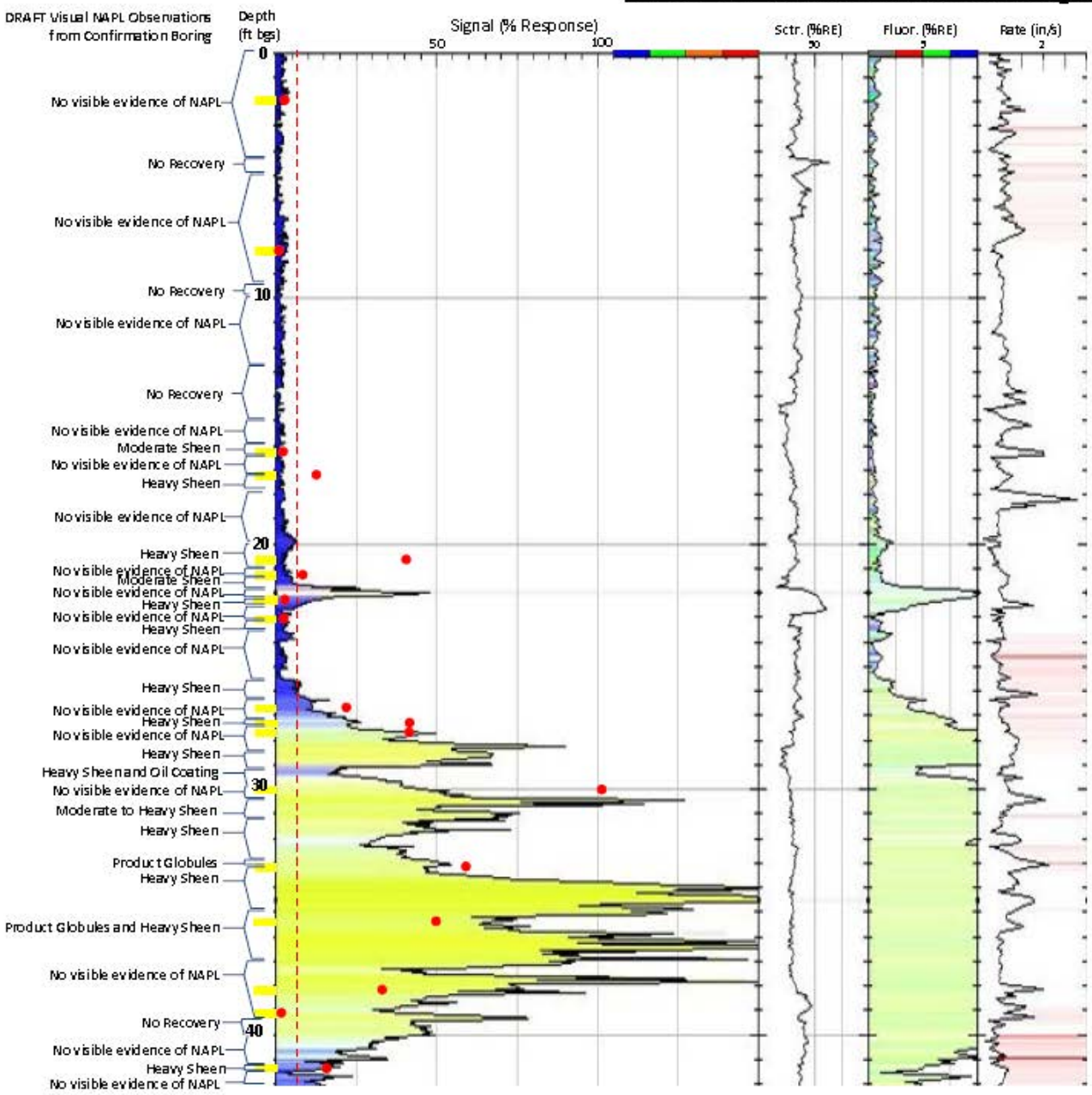

2013-SC-001
16' to 20'
2/18/13


2013-SC-001
16' to 20'
2/18/13


2013-SC-001
12' to 16'
2/18/13


2013-SC-001
16' to 20'
2/18/13

TarGOST Confirmation Boring 2013SC-046



Confirmation TarGOST Measurements

Location of confirmation TarGOST measurement

Plotted at approximate average value for TarGOST interval

≥%RE indicating NAPL presence

≥%RE Chosen to Indicate NAPL Presence = 6

Though there is some mismatch between the visual NAPL observations and the %RE response, the observations and %RE generally match. The %RE cutoff was determined to include the peak at 20 ft bgs but not those between 0 and 20 ft bgs despite some occasional evidence of sheen in the visual observations.

Presence of NAPL vs %RE

METHOD	RESULTING BEST FIT %RE INDICATING PRESENCE OF NAPL
Visual	9.5
In-situ Statistical – Graphical Approach	10
In-situ Statistical – Balancing Approach	7
Ex-situ Statistical – Graphical Approach	15
Ex-situ Statistical – Balancing Approach	5
Average	9.1

TABLE 4-1

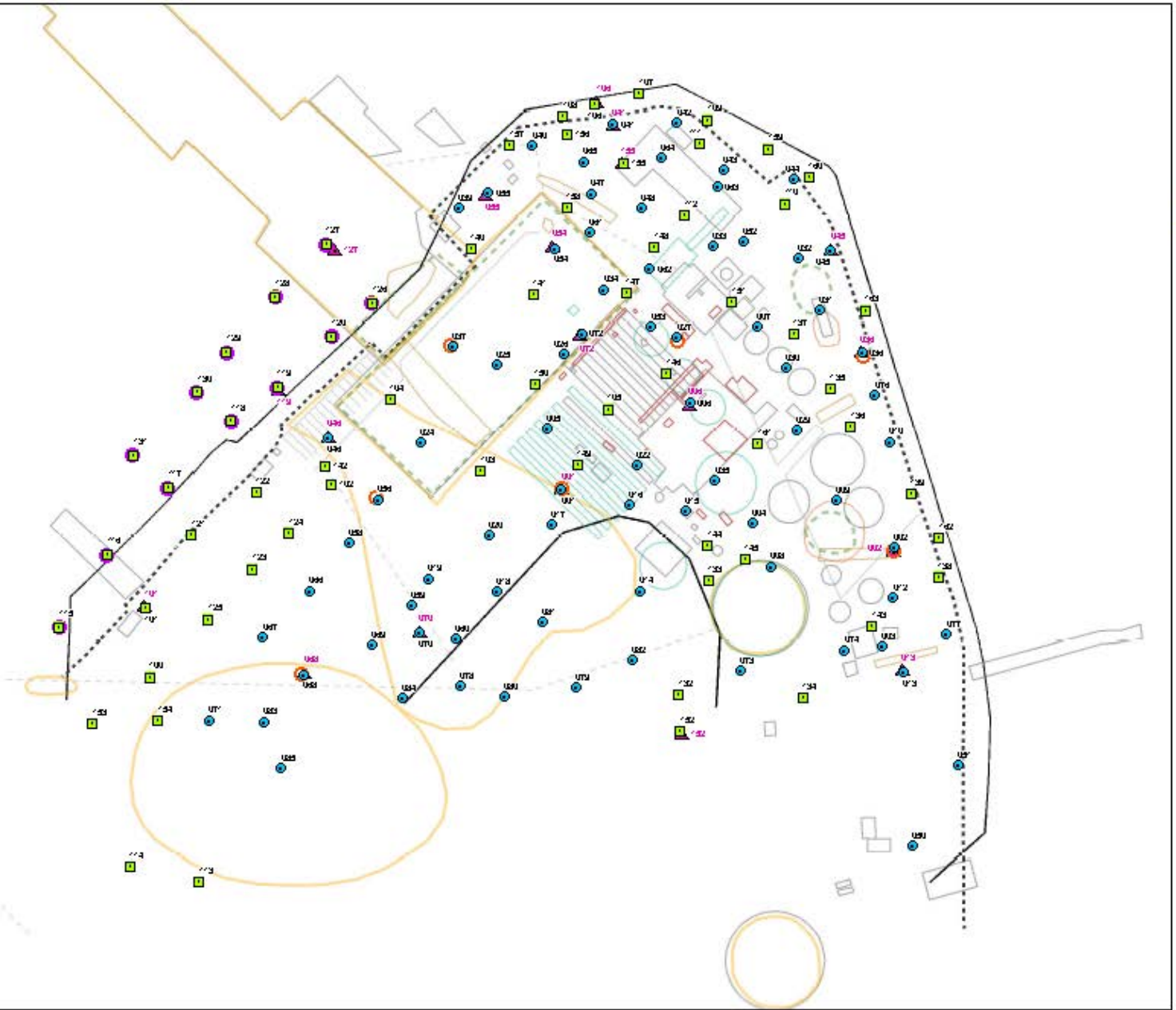
Preliminary NAPL Impacted Volumetric Analysis - Upland Area Behind Sheet Pile Wall Only

Wyckoff Upland Field Investigation

Volume Sampled	5% RE	10% RE	15% RE	25% RE	50% RE	100% RE	Units
755,018	167,071	109,069	82,563	52,777	21,739	7,109	Cubic Yards
100%	22%	14%	11%	7%	3%	1%	Percent of Volume Sampled

Note:

The raw response data from each TarGOST reading was converted from a discrete elevation to a thickness interval. Each discrete response measurement was applied to the interval represented by the midpoints between each discrete response depth. For example, for paired depths (Xi) and responses (Yi), (X1, Y1), (X2, Y2), and (X3, Y3), response Y1 at the top of the boring would apply to interval 0 to (X1+X2)/2, Y2 would apply to the interval (X1+X2)/2 to (X2 + X3)/2, and so on. The interval was then converted to a thickness corresponding to each reading.



LEGEND

TarGOST Location and Phase

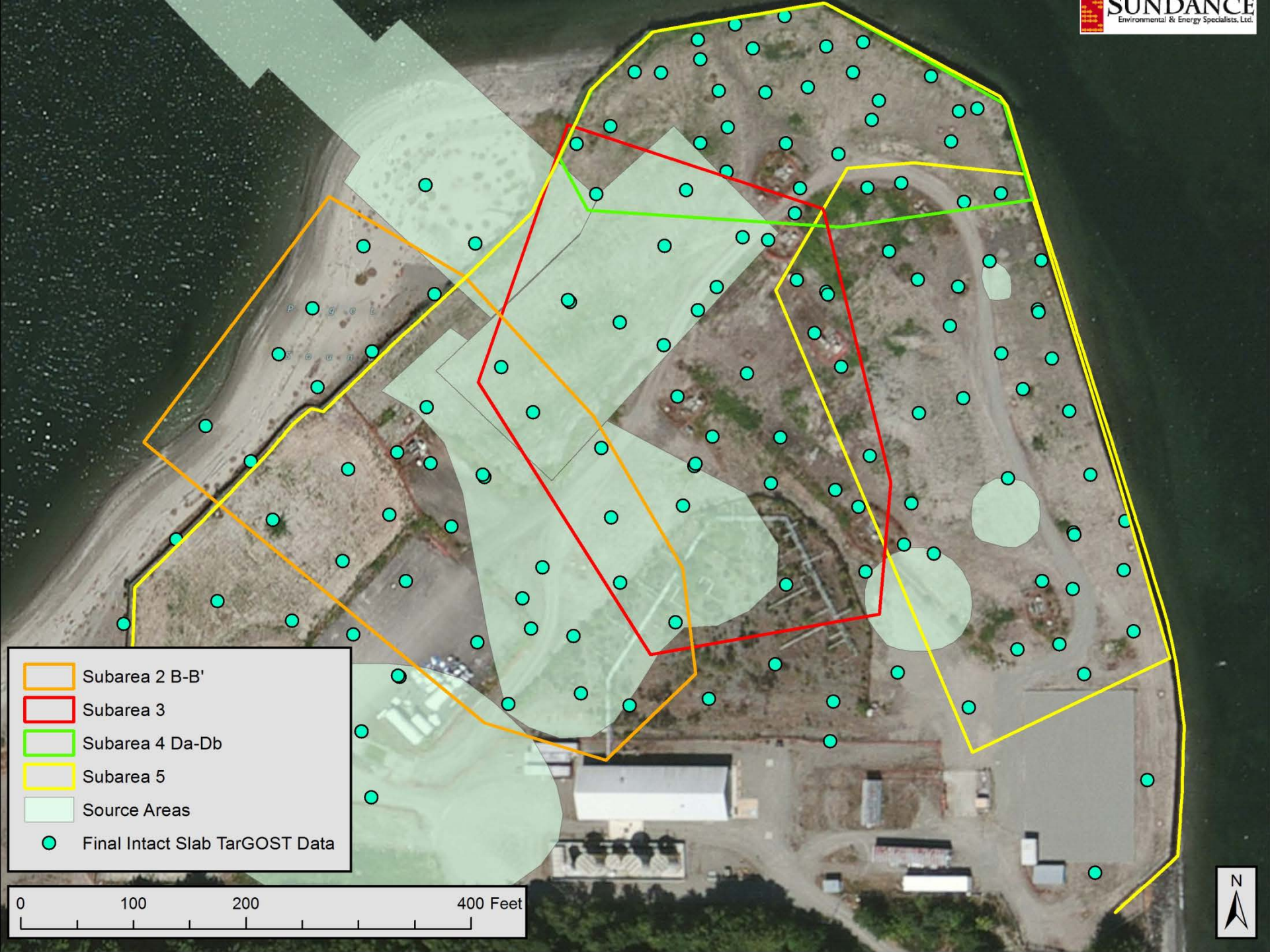
- Phase 1 TarGOST
- Phase 2 TarGOST
- Replicate TarGOST
- West Beach TarGOST Location
- Confirmation Boring
- Historic Features
- Historic Features Identified from 1917 Sandborn Map
- Potential Primary NAPL Sources (Sumps, Trenches, and other features with observed contamination)
- Potential Secondary NAPL Source Areas
- Trenching and other features of Interest Identified in April 1989 Map
- Site Remediation Excavation Performed in 1992 through 1994
- Bulk Head Prior to Current Sheet Pile Wall
- Current Sheet Pile Wall

Sources:
Bulk Head Prior to Current Sheet Pile Wall digitized from current sheet pile wall design drawings (USACE, 2000)
Some sumps and trenches were digitized from "Figure 1 Site Location" (Environmental Ecology, 1995)
Sumps and Trenches were digitized from "Figure B Area 1 Trenches and Sumps"; "Figure C Area 2 Drums, Sumps, 7 Tanks"; "Figure D Area 3 Containers, Drums, Sumps, Tanks & Trenches" (Environmental Ecology, 1995)
Secondary NAPL Source Locations digitized from "Figure 2-1 Wycoff Site Vicinity Map" (CH2M HILL, 1993)
Trenching observations digitized from 1989 hand markup.
Prioritizing of source areas conducted 2012.
Prior remediation excavation areas from 1992 through 1994 digitized from Ecology and Environment, Inc., 1995.

N

0 60 120 240 Feet

Figure 1-1
TarGOST Field Investigation Locations
Wyckoff Upland Field Investigation
Wyckoff/Eagle Harbor Superfund Site


SUNDANCE
Environmental & Energy Specialists, Ltd.
Subarea 2 B-B'
Subarea 3
Subarea 4 Da-Db
Subarea 5
Source Areas
Final Intact Slab TarGOST Data
0
100
200
400 Feet
N

	Comparison of In-Situ TarGOST to Visual Observations (Count of TarGOST readings)	Cutoff TarGOST Response [%RE] between presence and absence of NAPL					
		5%	7%	10%	13%	20%	27%
	NAPL Present in Both	2,683	2,439	2,097	1,725	1,172	853
	NAPL Absent in Both	12,346	12,946	13,376	13,577	13,804	13,950
False Negative	NAPL Absent in TarGOST, Present in Visual Observations	1,389	1,633	1,975	2,347	2,900	3,219
False Positive	NAPL Present in TarGOST, Absent in Visual Observations	2,168	1,568	1,138	937	710	564
	Total	**18,586**	**18,586**	**18,586**	**18,586**	**18,586**	**18,586**

	Comparison of In-Situ TarGOST to Visual Observations (Percent)	Cutoff TarGOST Response [%RE] between presence and absence of NAPL					
		5%	7%	10%	13%	20%	27%
	NAPL Present in Both	14%	13%	11%	9%	6%	5%
	NAPL Absent in Both	66%	70%	72%	73%	74%	75%
	Agreement	80.9%	82.8%	83.3%	82.3%	80.6%	79.6%
False Negative	NAPL Absent in TarGOST, Present in Visual Observations	7%	9%	11%	13%	16%	17%
False Positive	NAPL Present in TarGOST, Absent in Visual Observations	12%	8%	6%	5%	4%	3%
	Disagreement	19.1%	17.2%	16.7%	17.7%	19.4%	20.4%

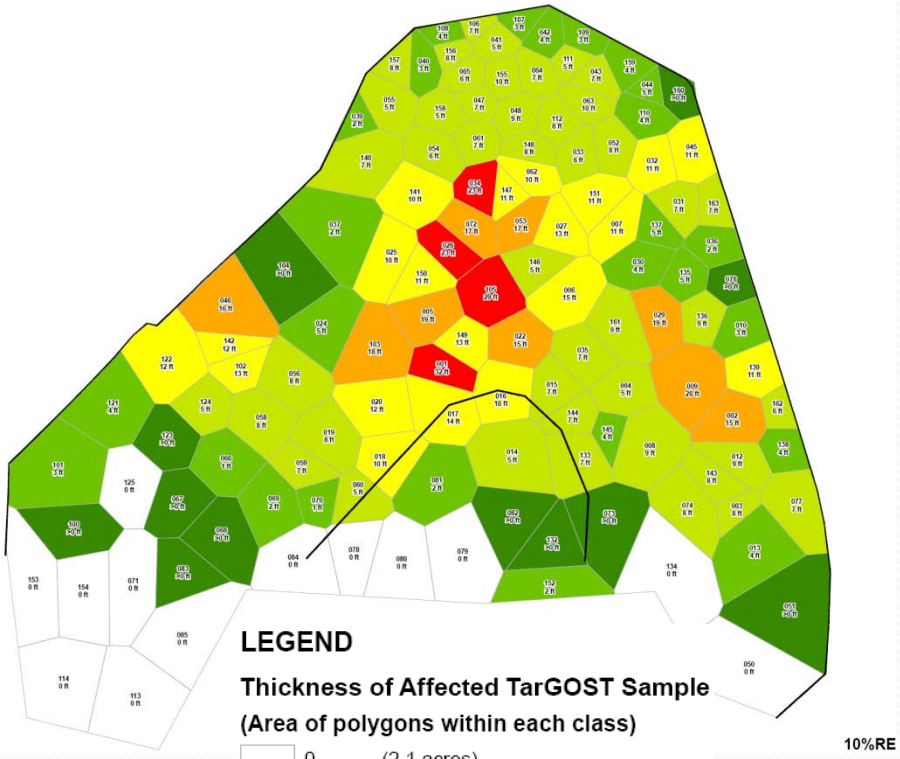
Circled values show the optimal %RE cutoff between presence and absence of NAPL for acheiving agreement in between the in-situ TarGOST and the visual NAPL observations as well as the best balance between false positives and false negatives. Selecting the %RE that acheives the best balance prevents introducing bias to the dataset as many factors may prevent a perfect match between in-situ TarGOST readings and colocated visual observation of confirmation borings.

Figure 4-3

In-Situ TarGOST Statistical Comparison with Co-Located Visual NAPL Observations from Confirmation Boring Logs in Order to Select Best %RE indicating Cutoff between Presence and Absence of NAPL

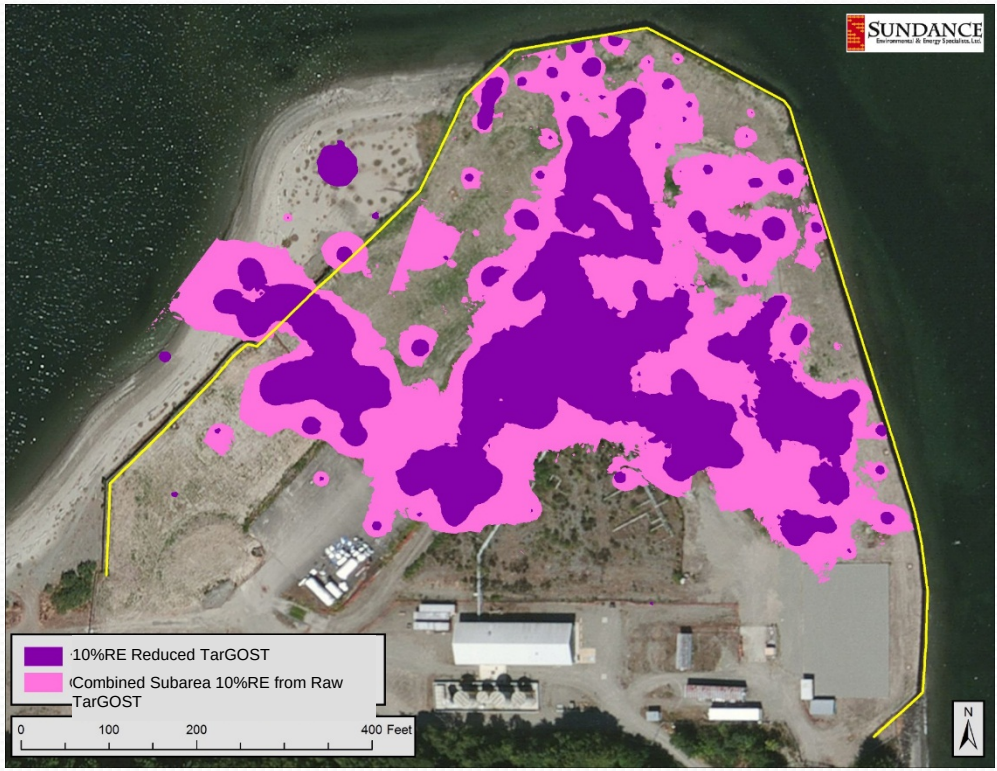
Total Volume Above 10%RE = 109,069 yd^3

Thickness of TarGOST sample above 10%RE



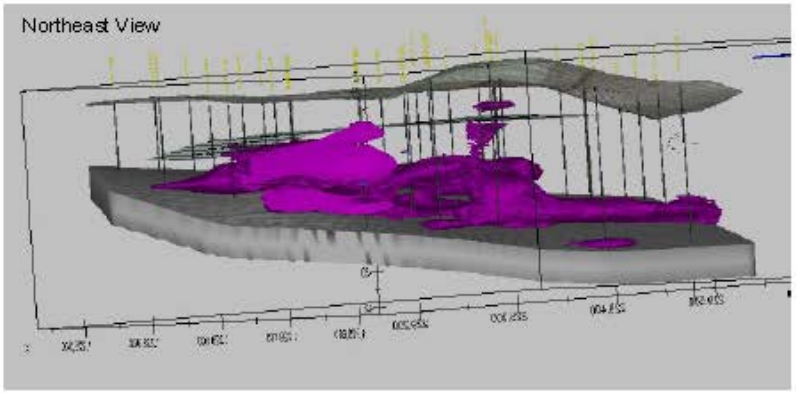
Total Volume Above 10%RE (Reduced) = 16,352 yd^3

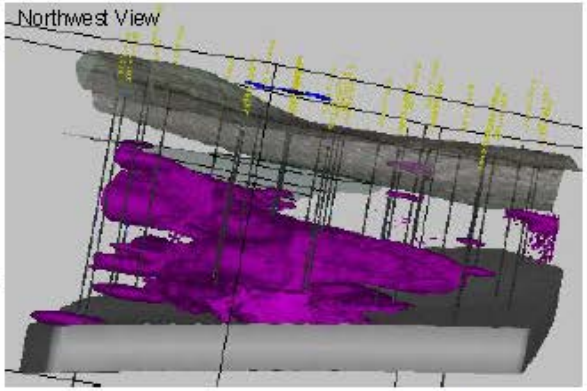
Total Volume Above 10%RE (Raw) = 68,908 yd^3



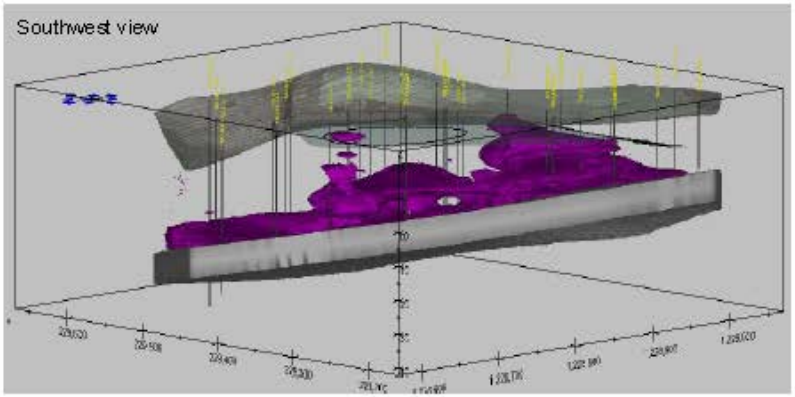
10 %RE from St. Germain Reduced TarGOST

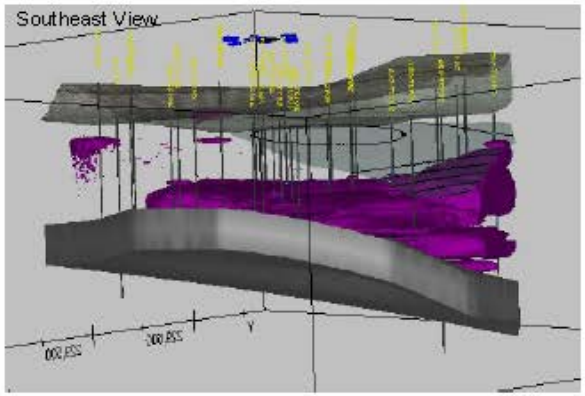
Combined Subarea 10 %RE from Raw TarGOST

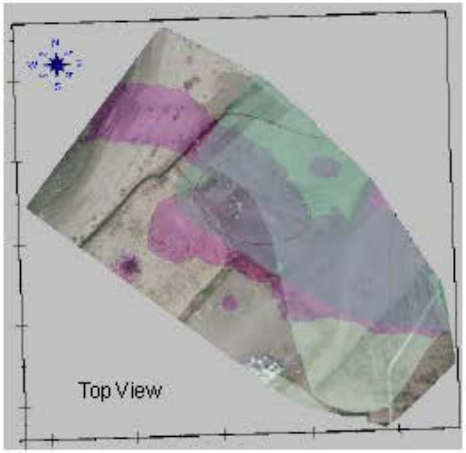


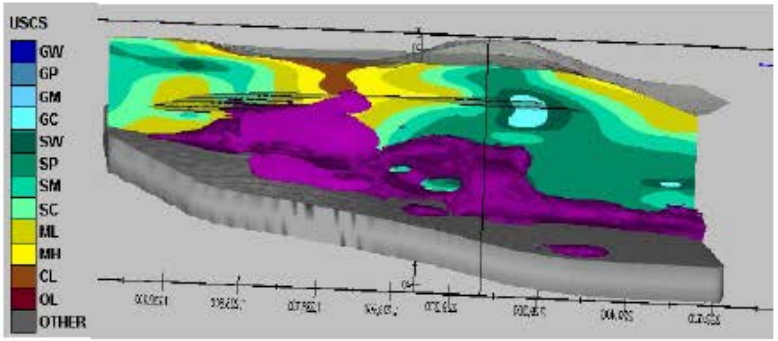


Site Map

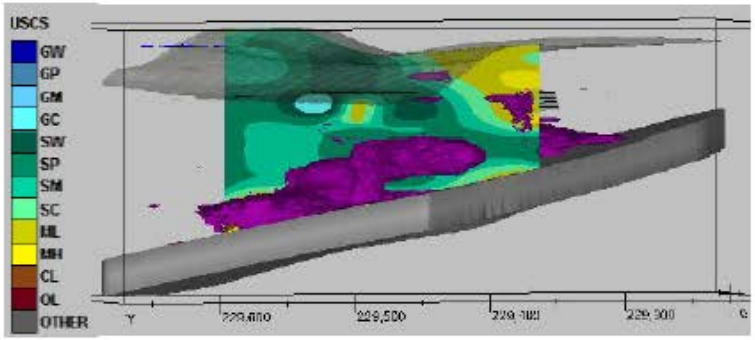






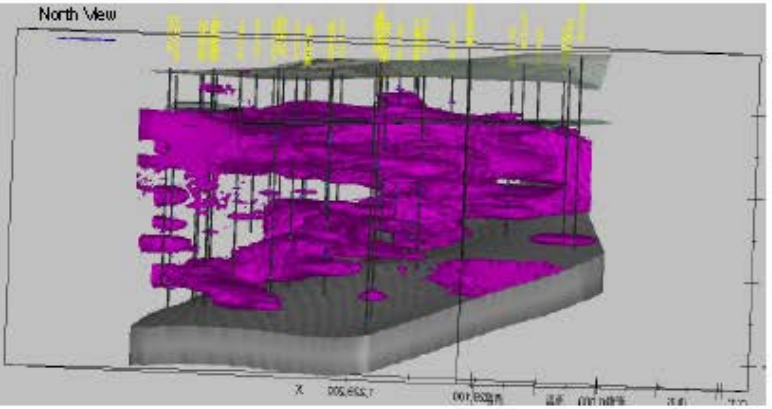


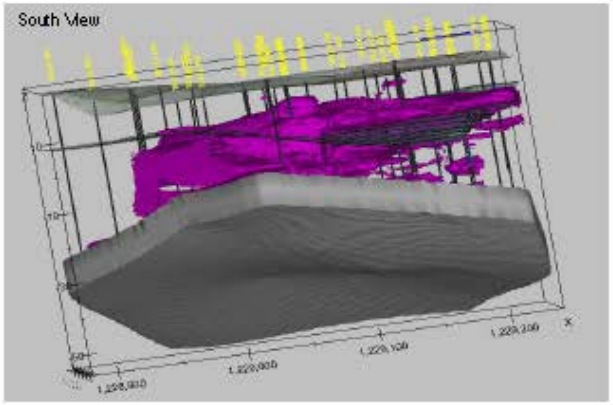
Northeast View - Lithology



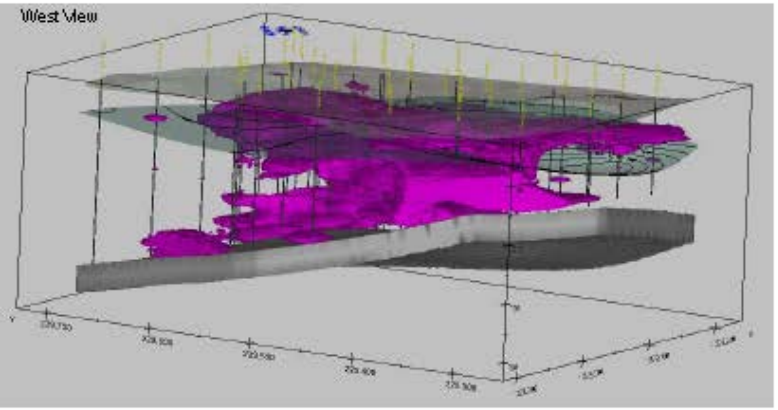
West View - Lithology

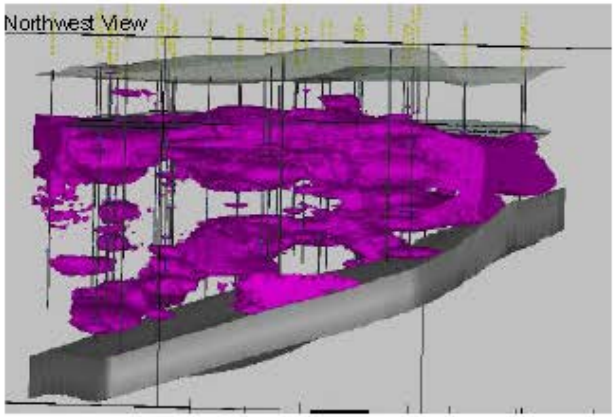
Plate 4
Visualization of Subarea 2

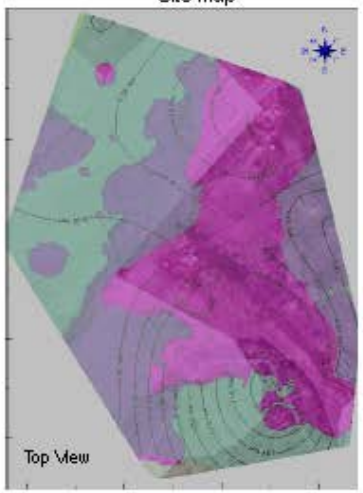


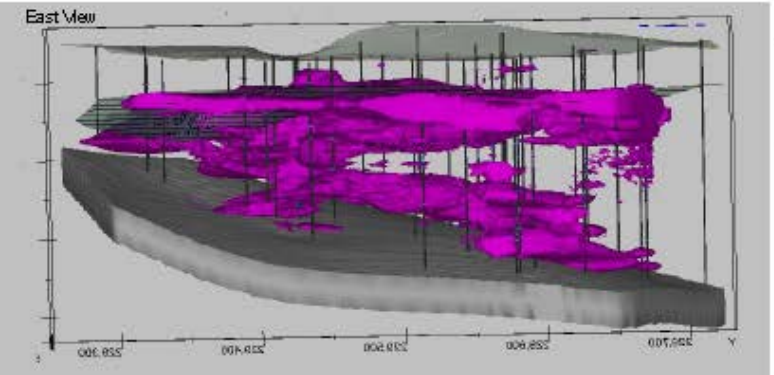


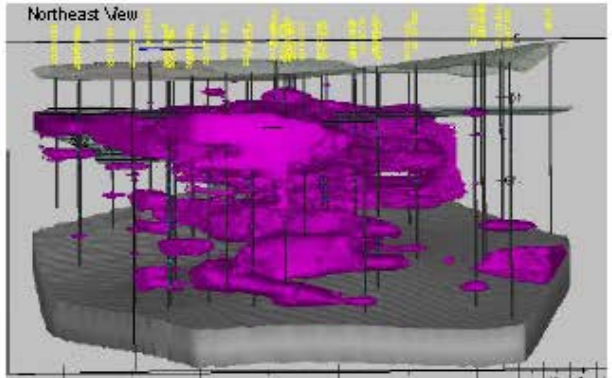
Site Map

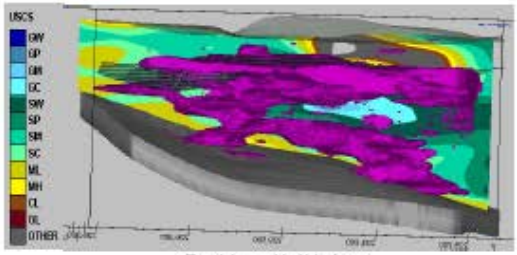






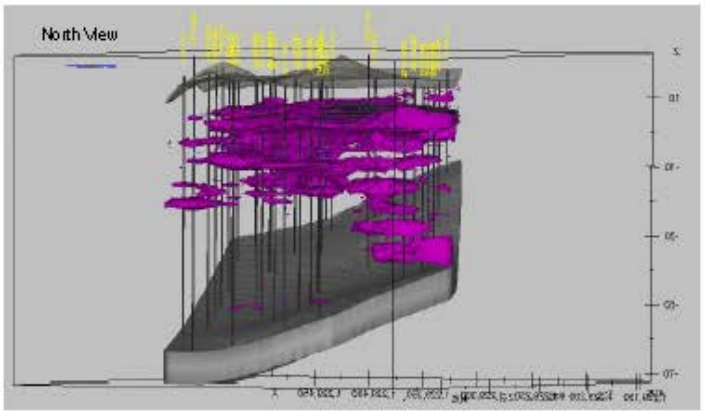


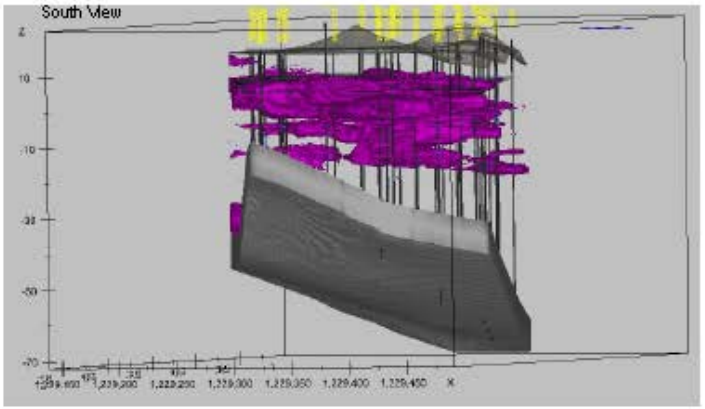




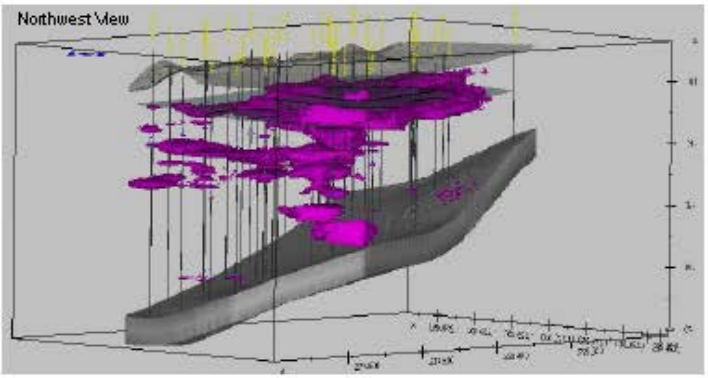
East View with Lithology

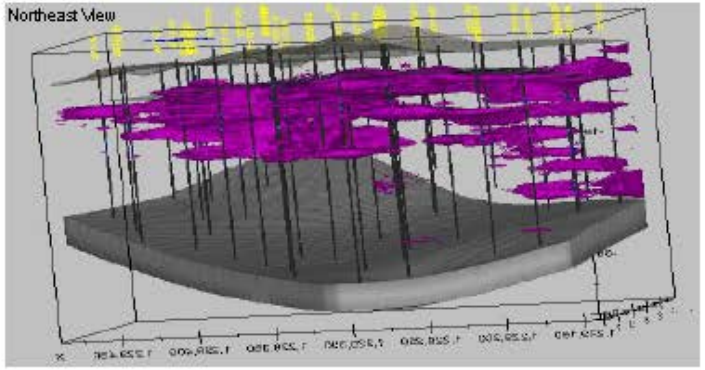
Plate 5
Visualization of Subarea 3

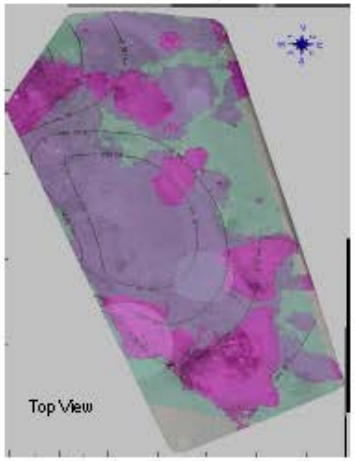


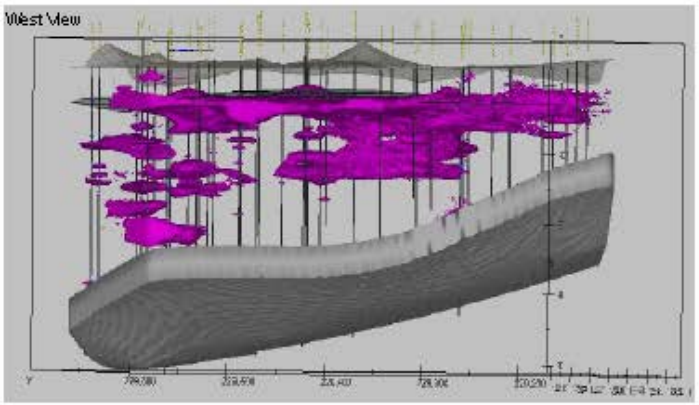


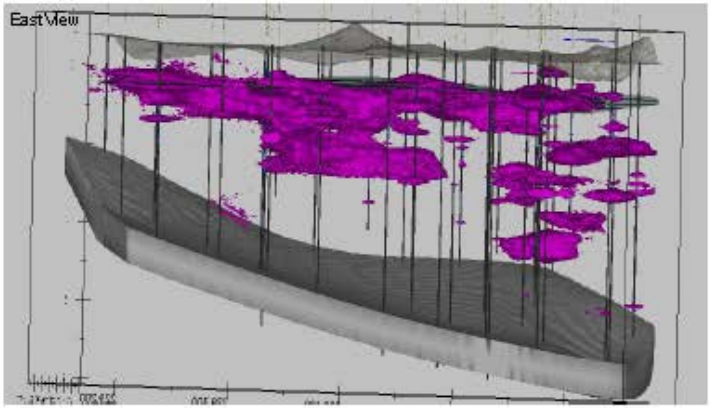
Site Map

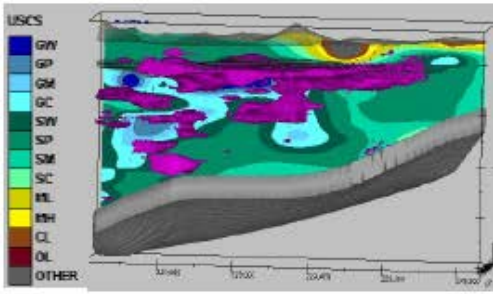












West View - Lithology

Plate 7
Visualization of Subarea 5

Table 5-2

Compartmental Volumes of Soil Types with TarGOST Response ≥10% RE

2013 Conceptual Site Model Update for the Former Process Area

Wyckoff / Eagle Harbor Superfund Site

Soil Type	SubArea 2 (CY)	SubArea 3 (CY)	SubArea 4 (CY)	SubArea 5 (CY)	Total (CY)
Compartment 1: Ground Surface to -5 ft MLLW					
Gravel	345	4,076	207	4,692	9,320
Sand	852	10,530	2,582	8,275	22,239
Silt	1,077	1,889	19	1	2,986
Clay	692	909	18	0	1,619
Fill	6	1,118	32	75	1,231
Total	2,972	18,522	2,859	13,043	37,396
Compartment 2: -5 ft MLLW to 10 ft above Aquitard					
Gravel	38	1,765	319	1,528	3,650
Sand	1,290	3,793	282	2,334	7,699
Silt	170	576	21	0	767
Clay	5	7	0	0	12
Fill	0	0	0	0	0
Total	1,504	6,142	622	3,862	12,130
Compartment 3: 10 ft above Aquitard to Bottom of Boring					
Gravel	688	363	169	63	1,283
Sand	6,335	4,004	301	218	10,858
Silt	2,248	2,121	383	39	4,791
Clay	1,592	444	33	0	2,069
Fill	0	0	0	0	0
Total	10,863	6,932	887	319	19,001
Compartment Sums					
Gravel	1,071	6,204	696	6,283	14,254
Sand	8,477	18,328	3,165	10,826	40,796
Silt	3,495	4,586	424	40	8,545
Clay	2,290	1,359	51	0	3,700
Fill	6	1,118	32	75	1,231
Total	15,339	31,595	4,368	17,224	68,526

Notes:

CY = cubic yards

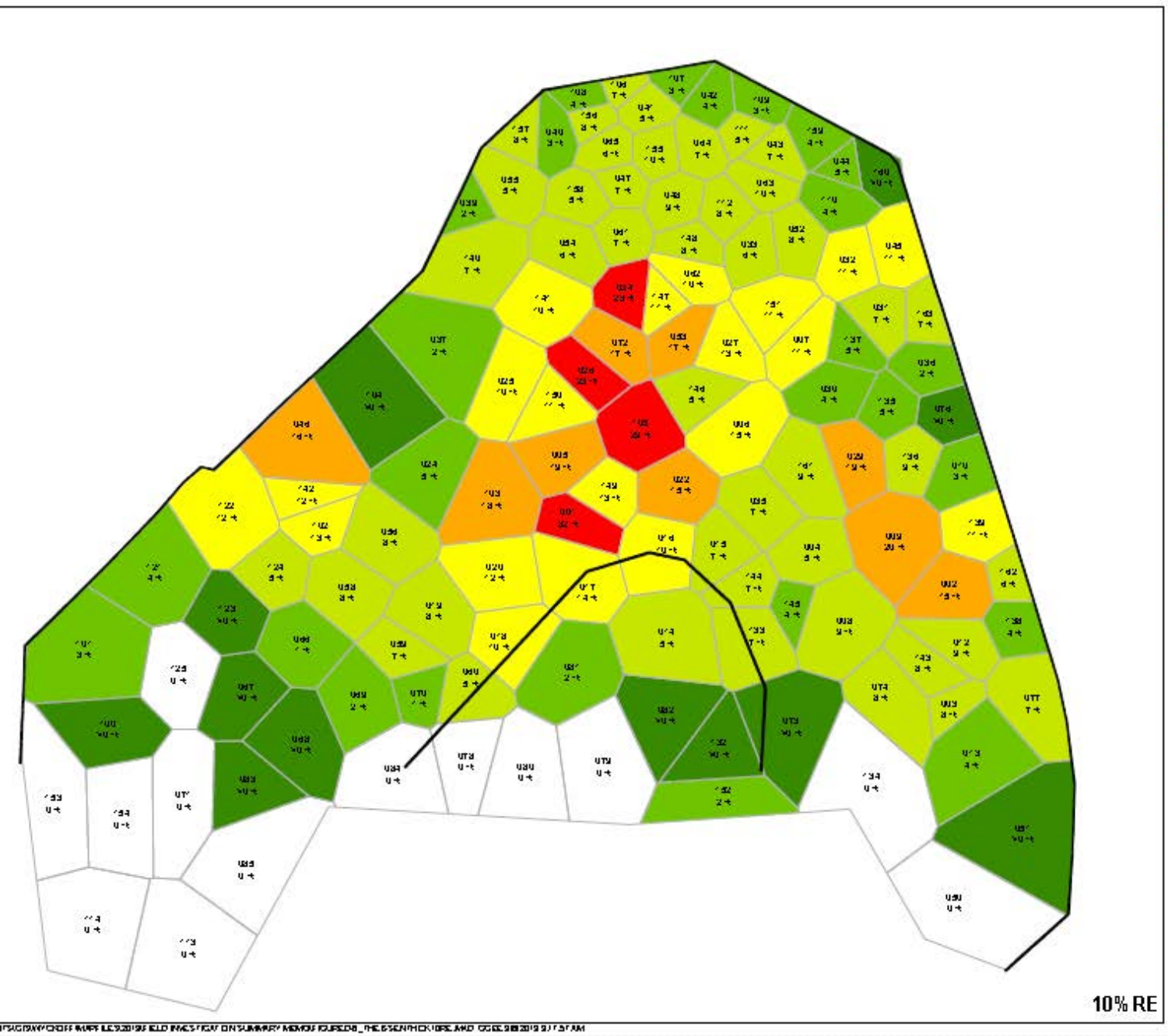


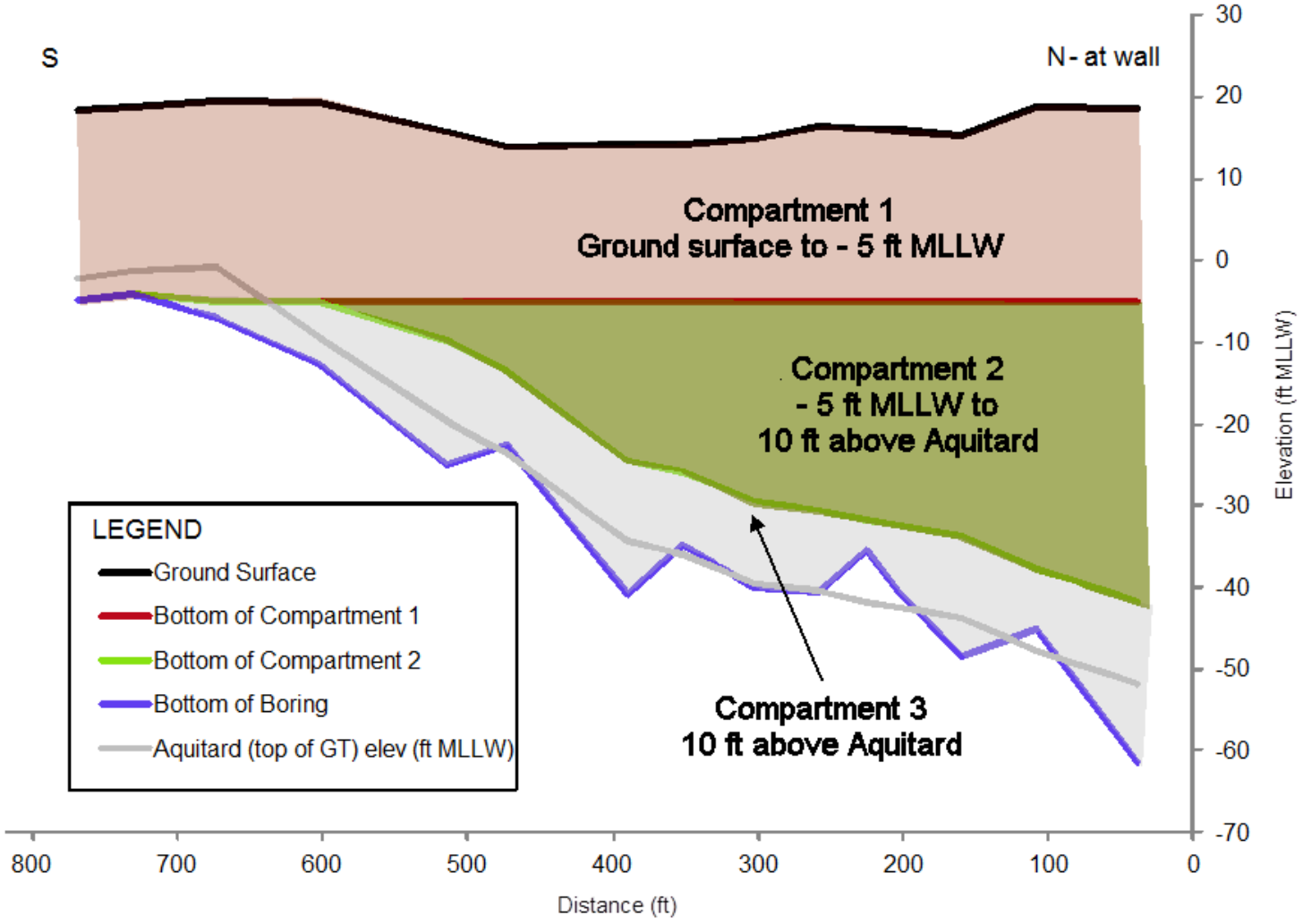
Figure D-6
Thickness of Affected TarGOST Samples
10%RE
Upland Dataset
Wyckoff Upland Field Investigation
Wyckoff/Eagle Harbor Superfund Site

Overlay of Combined Subarea 10%RE from Raw TarGOST with TarGOST Sample Thicknesses above 10%RE

Slide 2

10%RE

Treatment Compartments



Conclusions

- NAPL (creosote) is thickest in the vadose zone and Upper Aquifer in the center of the site.
- The thickest accumulations of creosote are beneath the former retort areas and to the east by the Naphthalene Block Excavation Area.
- Based on MVS analysis, NAPL volume is estimated at approximately 68 thousand cubic yards.
- Based on Theissen Polygon analysis, NAPL volume is estimated at 109 thousand cubic yards.
- 82 percent of the NAPL volume was found in coarser-grained material (sands and gravels)

FFS Next Steps

- Our next CIG meeting is February 4.
- At that meeting, EPA will be able to describe the Remedial Action Alternatives that are being evaluated,
- the Remedial Action Objectives that each alternative is designed to meet,
- and the criteria being used in the Comparative Analysis of Alternatives.

Public Involvement Next Steps

- EPA Public meeting on December 10, at City Hall – please encourage your community constituencies to attend.
- Note that Site Investigation Report and FFS process overview are available on the EPA website, you can direct people there.
- CIG meeting February 4 .
- If ideas or suggestions in-between meetings, please call Dawn.
- Thank you for your involvement!